DEVELOPMENT AND ANALYSIS OF MEDICINE AND NATURAL BEVERAGES

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ABSTRACT

In this study, an extract and concentrates of the asparagus (Silybum marianum) and ginger (Zīngiber officinale) plants were prepared by adding the drink to apple and cherry juices, and the composition of the drink found to be the best in terms of organoleptic characteristics was studied by the USSX method. The resulting drink has high biological and therapeutic properties, and its use is effective in preventing the occurrence of alimentary, liver and other diseases in the population.

KEYWORDS: asparagus plant, ginger, extract, concentrate, juice, alimentary and liver diseases, biological indicator, flavolignan, flavonoid, medicinal drink.

Methods. Recipes and technology of medicinal and natural drinks have been developed for the prevention of foodborne diseases. The chemical composition of the drink prepared on the basis of new technology, the amount of flavolignan and flavonoids, safety indicators were studied.

The results obtained. A new type of medicinal and natural beverage production technology has been developed based on asparagus seed and ginger root extracts. The amount of toxic elements and organic chlorine compounds in the finished product was studied.

Conclusion. According to the results, the drink prepared in the laboratory was evaluated as meeting the requirements of SanPiN.

One of the most popular beverages in the world and in our country is fruit juice. Juices - stimulants - are a complete valuable product, consisting of vitamins, enzymes, minerals, trace elements and other substances.

The biological feature of juices is that they are not only easily digestible products, but also involved in the easy absorption of fats, proteins and sugars, which are common in other foods. The value of juices is further enhanced by the fact that the substances contained in them form a biological complex and are directed to mutual enhancement.

Fruit and berry juices are well soluble in water, do not contain foreign and mineral compounds, retain their high-quality properties, which are widely used in human nutrition during storage. The same properties allow the use of juices as a raw material for the preparation of medicinal drinks [1].

Ginger and asparagus extracts were added to the composition of the beverages to give the developed medicinal drinks bright taste qualities [2,3,4,5,6]. Along with the taste qualities, this raw material also has a number of useful properties. As a rich source of micronutrients, vitamins and organic acids, apple juice was selected as one of the main objects.Apple and cherry concentrate prepared at the juice factory was used. The following are the physicochemical characteristics of concentrates produced at the enterprise level.

Table 1

Physicochemical properties of the concentrate

№	Concentrate type	Physicochemical properties of concentrates			
		Bx	NTU	Acid	Color indicator
1	Apple concentrate	69.5	1.5 – 1.7	3	36
2	Cherry concentrate	63.69	3.2 – 4.6	6.45	25

Development of recipes for the preparation of medicinal and natural drinks and their analysis

In the laboratory, a medicinal drink recipe based on fruit concentrates and plant extracts was developed in 7 variants. The organoleptic characteristics of the drink prepared according to these recipes were studied. The drink in recipe 1 that showed the best result was selected.

Table 2

A drink made in the laboratory (1 - recipe)

№	An integral part of the drink	Quantity	Unit of measurement
1	Apple concentrate	200	*ml*
2	Asparagus concentrate	20	*ml*
3	Ginger extract	20	*ml*
4	Distilled water	700	*ml*
5	Sugar	10	*g*
6	Citric acid	0.3	*g*
	Total	1000	*ml*

The amount of dry matter in the drink prepared on the basis of this recipe was determined using a refractometer. Accordingly, 1 - the amount of solute dissolved in the composition of apple juice prepared according to the recipe - is 11%.

A tasting group of 6 people was formed to determine the organoleptic characteristics of the drinks prepared in the laboratory and to know the feedback. Drinks prepared by this group on the basis of 3 different recipes in the laboratory were evaluated on a 15-point scale in terms of taste, smell, color, consistency, turbidity. The evaluation given by the tasting group is given in the table below.

Table 3

Evaluation of organoleptic characteristics of beverages prepared in the laboratory

Drink number	Indications of drinking	Rating, points	Note
№1	Taste and smell	5	The taste of the drink is pleasant, typical of apple juice, the level of sweetness is moderate, without foreign tastes. The smell is fragrant, typical of apple juice. The extracts of medicinal plants included in the recipe did not adversely affect the taste and odor characteristics of the drink
	Color	5	Color - uniform, reddish throughout the

			entire mass. Without sediments.
	Consistency	5	A homogeneous stable transparent liquid.
	Overall score:15		

According to the assessment of the tasting commission, the drink prepared on the basis of №1 recipe was highly valued, and research work was continued to study the physicochemical and safety characteristics of the drink prepared on the same recipe. The drink was also named " Healing " by mutual agreement of the commission members and researchers.The amount of silymarin and silibinin, substances affecting the liver, in the drink prepared on the basis of 3 different recipes was determined. The results obtained are given in the table below.

Table 4

The amount of silymarin and silibinin in the drink prepared according to different recipes

№	Naming	Silimarin	Silibinin
		mg/100 *ml*	
1	№1 - drink prepared according to the recipe	3.07	0.92
2	№2 - drink prepared according to the recipe	3.97	1.19
3	№3 - drink prepared according to the recipe	3.25	0.94

The amount of silymarin in the beverage prepared on the basis of recipe number 1, which had the highest organoleptic performance, was 3.07 mg per 100 ml of beverage, ie 2 -; and the amount of active ingredients is low compared to a drink prepared on the basis of 3 recipes. In the production of prescription options, 20 ml of concentrate containing the active substance was added to 1 liter of beverage according to the recipe. In addition, a concentrate rich in biologically active substance obtained from the seeds of asparagus plant №2 - 30 ml per recipe and №3 - 15 ml per recipe, and the drink was prepared. The results obtained correspond to the amount of active substance included in the recipes. The amount of silybin in all beverages accounts for an average of 30% of silymarin. №2 - The content of flavolignans in the drink prepared on the basis of the recipe is slightly higher than in the drinks prepared on other recipes. However, despite the high content of biologically active substances in the composition of the drink

prepared on the basis of this recipe, it was found that the organoleptic characteristics are lower than the drink prepared according to the recipe №1. In addition, according to the Chinese Pharmacopoeia and the requirement for functional products, biologically active substances included in food products should not exceed the daily allowable limit. Determination of flavonoids in the drink "Healing".The amount of flavonoids, one of the most important substances in the drink, which has a positive effect on the body, was studied by the method of YSSX.

Table 5

The amount of flavonoids in the finished product

Product	**The amount of flavonoids mg / 100g**			
	Rutin	Gall acid	Norvagenin	Quercetin
Drink	1.220	1.075	0,130	0.066

It was found above that the content of gallic acid and rutin in the concentrate obtained from the seeds of asparagus plant prepared for addition to the drink is several times higher than that of other flavonoids. The table also shows that these flavonoids are quantitatively superior to other flavonoids in the composition of the finished drink. Norvagenin contained 0.130 ml per 100 ml of drink and quercetin 0.066 mg. The significant amount of flavolignan and flavonoids in the drink and the regular consumption of such drinks eliminates the risk of diseases that can occur in the body [2, 3,7,8,9,10].

Table 6

Toxic elements and organochlorine in the Healing drink amount of pesticides

N	Product name	The detected amount is mg / kg. not more than							
		Zn	Cd	Pb	Cu	As	Hg	GXTG	DDT
1	"Healing" drink	1.328	0.018	0.361	0.385	0.029	0.01	-	0,0013
	PDK	10,0	0,03	0,4	5,0	0,2	0,02	0,05	0,1

Zn was found to contain 1.328 mg / kg, 7.5 times the allowable norm, Cd 0.6 times, Pb 1.1 times, Cu 12.9 times, As 6.9 times, and Hg 2 times less than the allowable limit. We can see that dichlorodiphenyltrichloroethane (DDT) is also present in very small amounts. Hexachlorane is not present in the drink at all. So we can say that this drink meets the requirements of SanPiN.

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